

WHAT IS CLAIMED IS:

1. An image forming apparatus having:

image forming means for forming an image on an
image bearing member;

5 transferring means for electrostatically
transferring the image on said image bearing member
to a transferring medium;

 said transferring means being provided with a
transferring member capable of contacting with said
10 image bearing member, and voltage applying means for
applying a voltage to said transferring member;

 electric current detecting means for detecting
an electric current flowing from said voltage
applying means to said transferring member; and

15 control means for performing an electric
current detecting operation of detecting the electric
current flowing when said voltage applying means
applies a predetermined voltage before an image
transferring operation of said transferring means by
20 said electric current detecting means, and
determining a transfer voltage applied to said
transferring member during the image transferring
operation, on the basis of a result of the detection
by said electric current detecting operation;

25 wherein said electric current detecting
operation is performed a plurality of times, and
a time required for an electric current

detecting operation performed before a certain electric current detecting operation performed at and after the second time is shorter than a time required for said certain electric current detecting operation.

5

2. An image forming apparatus according to Claim 1, wherein a second voltage applied during said certain electric current detecting operation is determined on the basis of a current value detected
10 when a first voltage is applied in the electric current detecting operation performed before said certain electric current detecting operation, and said transfer voltage is determined on the basis of the result of the electric current detection during
15 the application of said second voltage.

3. An image forming apparatus according to Claim 2, wherein a voltage-current characteristic of said transferring member is judged on the basis of
20 the current value detected during the application of said first voltage, and said second voltage is determined so that a target current value may be obtained in said voltage-current characteristic, and the voltage-current characteristic of said
25 transferring member is again judged on the basis of the current value detected during the application of said second voltage, and said transfer voltage is

determined so that said target current value may be obtained in said voltage-current characteristic.

4. An image forming apparatus according to
5 Claim 1, wherein said transferring member comprises a rotary member, and a time required for said certain electric current detecting operation is equal to or longer than a time for which said rotary member makes one rotation.

10

5. An image forming apparatus according to
Claim 1, wherein said transferring member comprises a rotary member, and a time required for the electric current detecting operation performed before said
15 certain electric current detecting operation is less than a time for which said rotary member makes one rotation.

6. An image forming apparatus according to
20 Claim 2, further having temperature and humidity detecting means for detecting a temperature and humidity state, and wherein a value conforming to detected temperature and humidity information is used as said first voltage.

25

7. An image forming apparatus according to
Claim 3, further having temperature and humidity

detecting means for detecting a temperature and humidity state, and wherein a conforming to detected temperature and humidity information is used as said target current value.

5

8. An image forming apparatus according to Claim 1, wherein the electric current detecting operation performed before said certain electric current detecting operation is performed
10 substantially simultaneously with the start of the movement of said image bearing member.

9. An image forming apparatus having:
image forming means for forming an image on an
15 image bearing member;

transferring means for electrostatically transferring the image on said image bearing member to a transferring medium;

said transferring means being provided with a
20 transferring member capable of contacting with said image bearing member, and electric current applying means for applying an electric current to said transferring member;

voltage detecting means for detecting a voltage
25 applied to said transferring member by said electric current applying means; and

control means for performing the voltage

detecting operation of detecting the voltage applied
when said electric current applying means applies a
predetermined electric current before an image
transferring operation of said transferring means by
5 said voltage detecting means, and determining a
transfer electric current applied to said
transferring member during an image transferring
operation on the basis of a result of the detection
by said voltage detecting operation;

10 wherein said voltage detecting operation is
performed a plurality of times, and
a time required for a voltage detecting
operation performed before a certain voltage
detecting operation performed at and after the second
15 time is shorter than a time required for said certain
voltage detecting operation.

10. An image forming apparatus according to
Claim 9, wherein a second electric current applied
20 during said certain voltage detecting operation is
determined on the basis of a voltage value detected
when a first electric current is applied in the
voltage detecting operation performed before said
certain voltage detecting operation, and said
25 transfer electric current is determined on the basis
of a result of the voltage detection during the
application of said second electric current.

11. An image forming apparatus according to Claim 10, wherein a voltage-current characteristic of said transferring member is judged on the basis of a voltage value detected during the application of said first electric current, and said second electric current is determined so that a target voltage value may be obtained in said voltage-current characteristic, and the voltage-current characteristic of said transferring member is again judged on the basis of a voltage value detected during the application of said second electric current, and said transfer electric current is determined so that said target voltage value may be obtained in said voltage-current characteristic.

15

12. An image forming apparatus according to Claim 9, wherein said transferring member comprises a rotary member, and a time required for said certain voltage detecting operation is equal to or longer than a time for which said rotary member makes one rotation.

13. An image forming apparatus according to Claim 9, wherein said transferring member comprises a rotary member, and a time required for the voltage detecting operation performed before said certain voltage detecting operation is less than a time for

25

which said rotary member makes one rotation.

14. An image forming apparatus according to
Claim 10, further having temperature and humidity
5 detecting means for detecting a temperature and
humidity state, and wherein a value conforming to
detected temperature and humidity information is used
as said first electric current.

10 15. An image forming apparatus according to
Claim 11, further having temperature and humidity
detecting means for detecting a temperature and
humidity state, and a value conforming to detected
temperature and a humidity information is used as
15 said target voltage value.

16. An image forming apparatus according to
Claim 9, wherein the electric current detecting
operation performed before said certain voltage
20 detecting operation is performed substantially
simultaneously with the start of the movement of said
image bearing member.